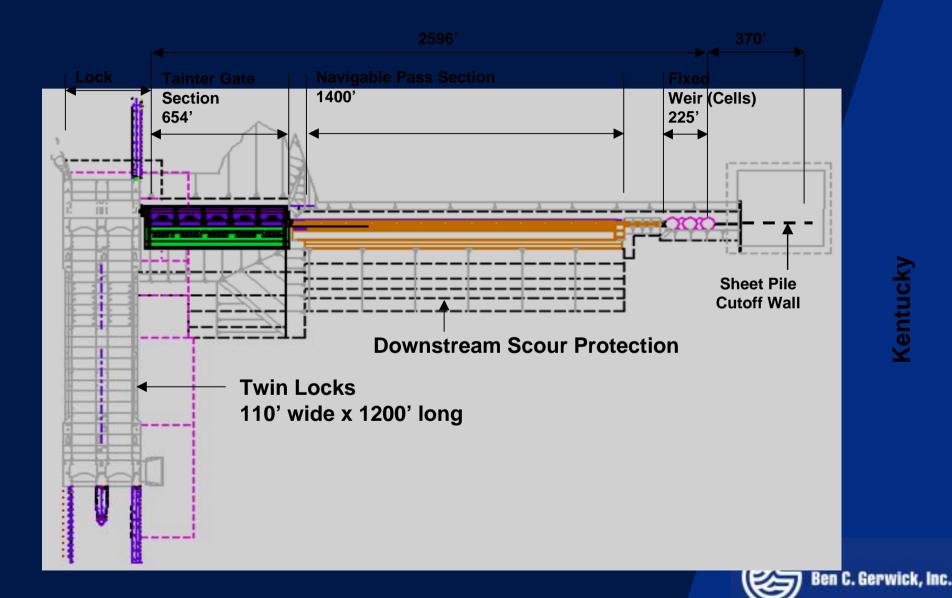
#### Rendering of Completed Lock & Dam



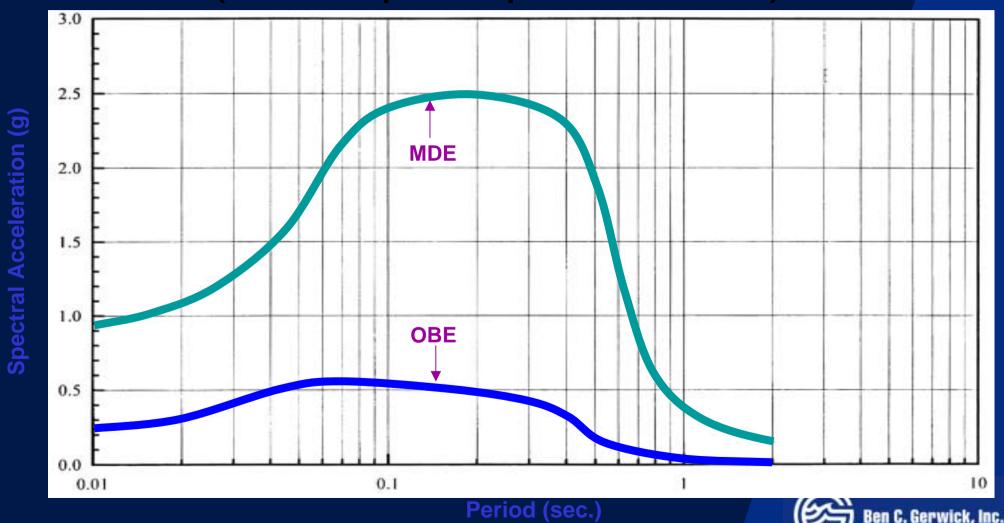


#### Major Project Components

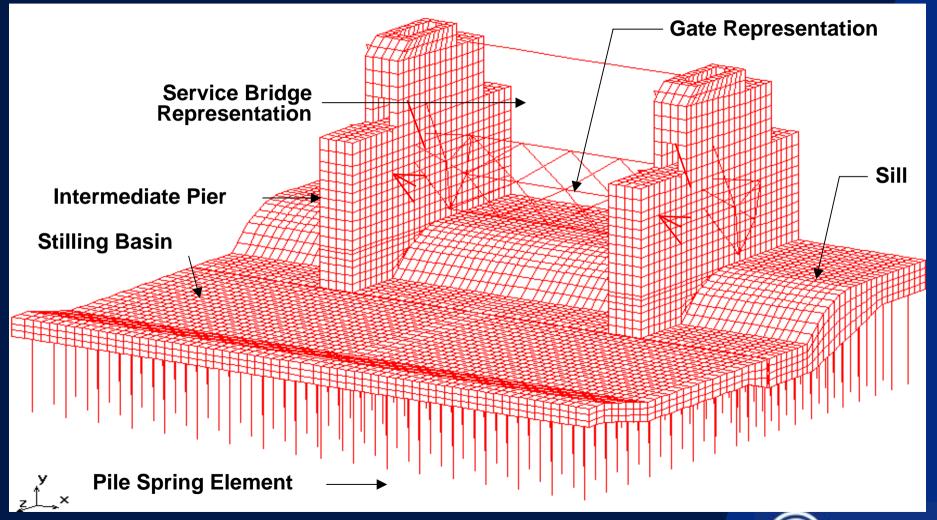


#### Level 2 - Response Spectrum Method

(Horiz. Response Spectra at Mudline)

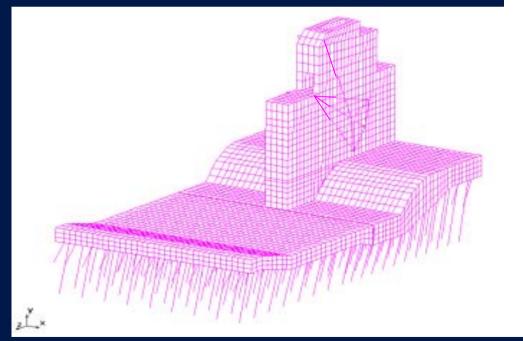


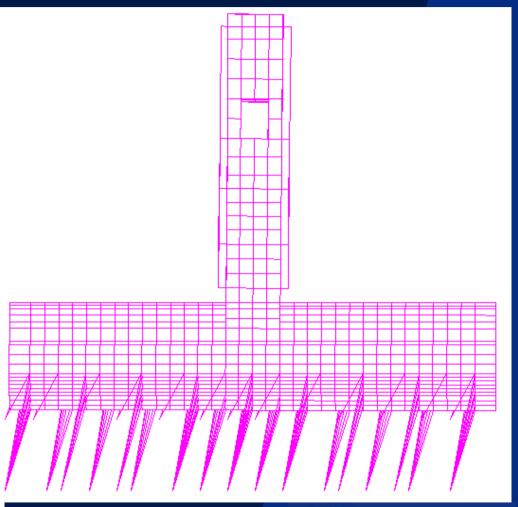
# Model for 2 Dam Gate Bays – Tainter Gate Section



## Single Dam Gate Bay Model for Seismic Analysis – Primary Transverse Mode Shape

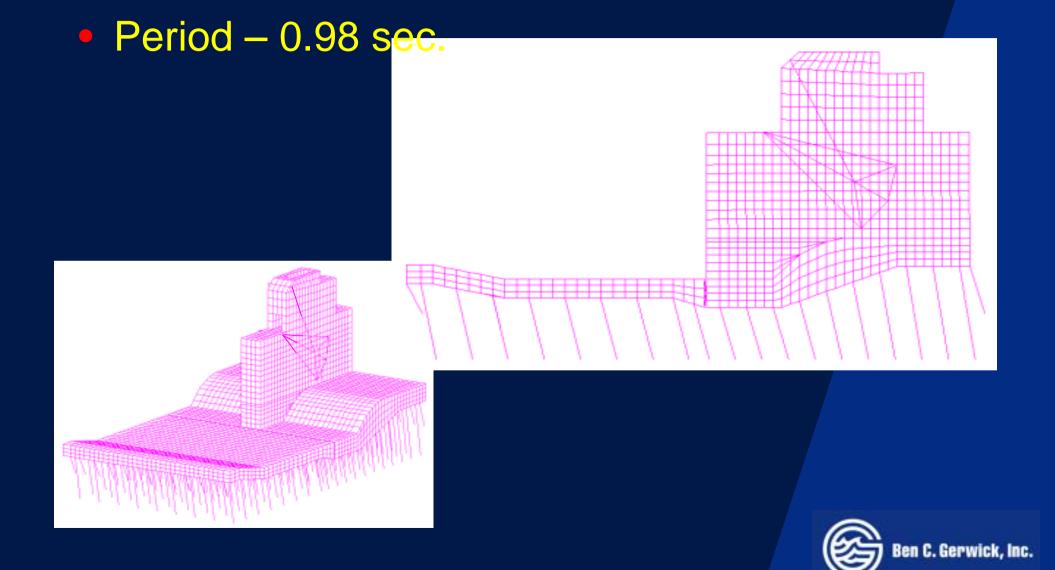
Period – 0.99 sec.



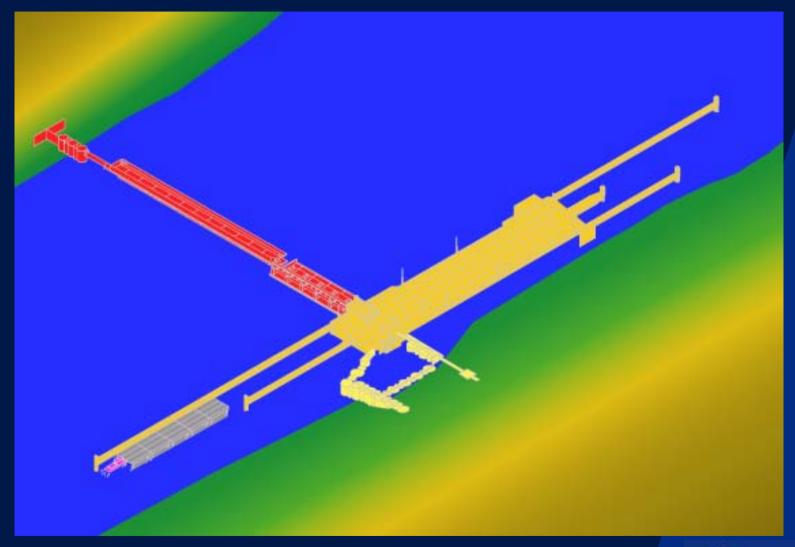




## Single Dam Gate Bay Model for Seismic Analysis Primary Logitudinal Mode Shape

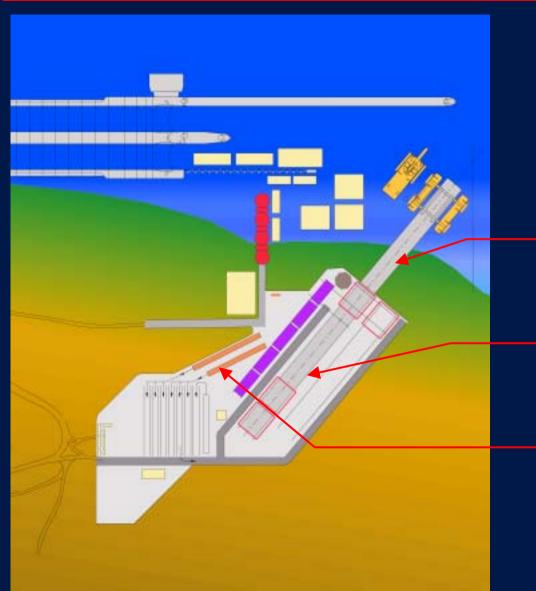


#### Olmsted Dam Completed Construction





#### Precast Yard - General Site Plan



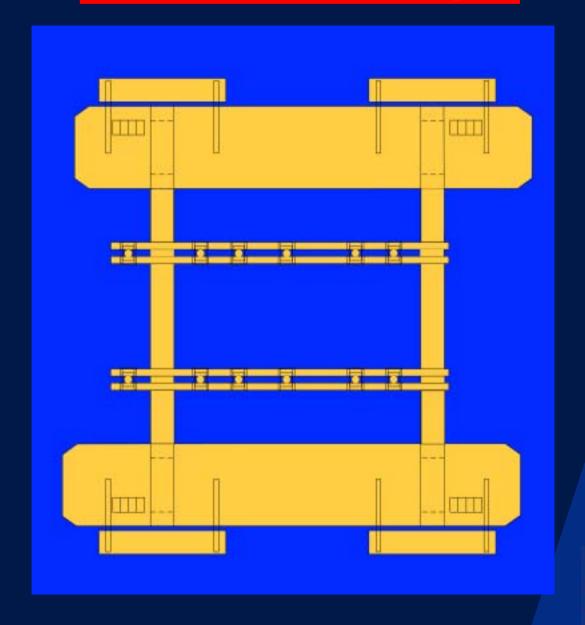
-MARINE SKIDWAY

LANDBASE SKIDWAY

PRECAST BEDS



#### Catamaran Barge



2800 TON LIFTING CAPACITY



#### Catamaran 3,000 ton Lift



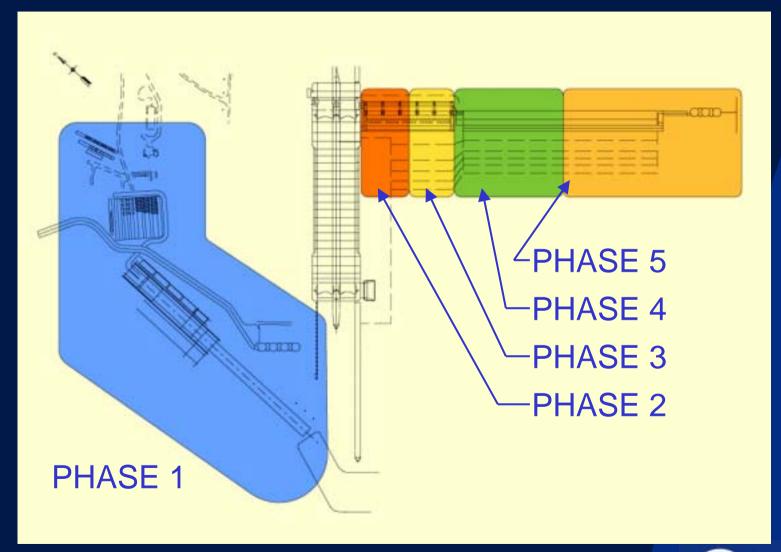


#### Strand Jacks Used for Oresund



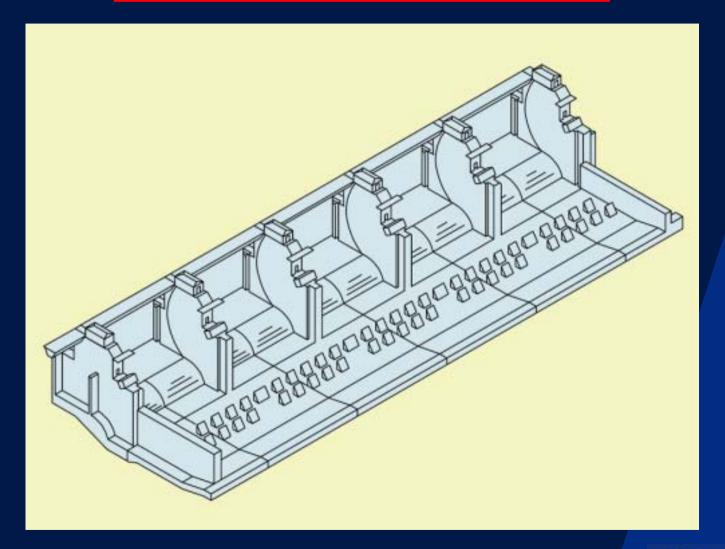


#### Global Erection Plan Phases 1,2,3,4,and 5



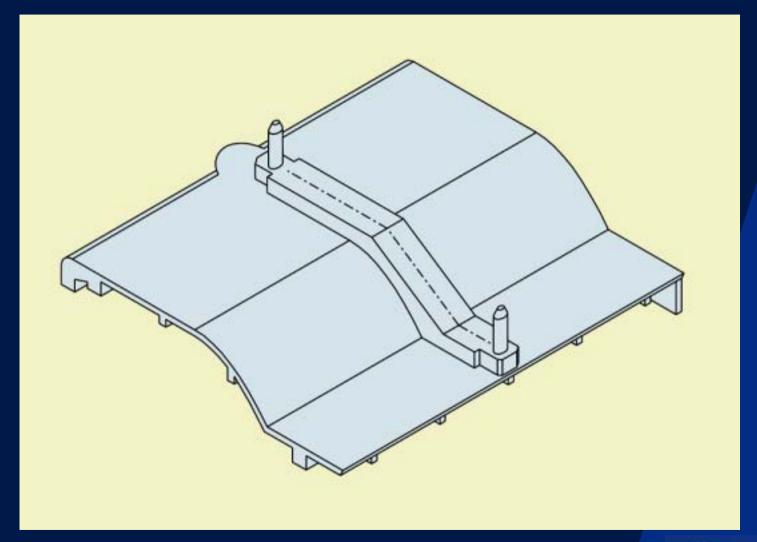


#### **Tainter Gate Section**



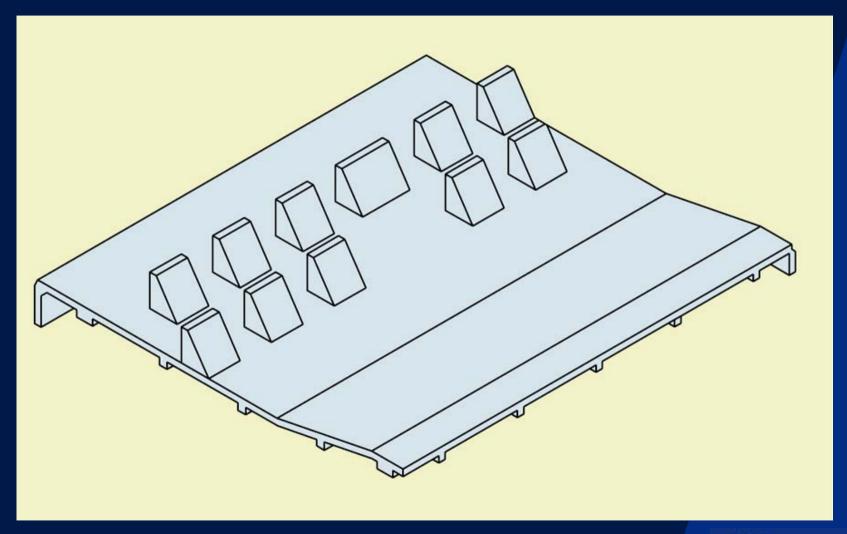


#### Precast Tainter Gate Sill Shell



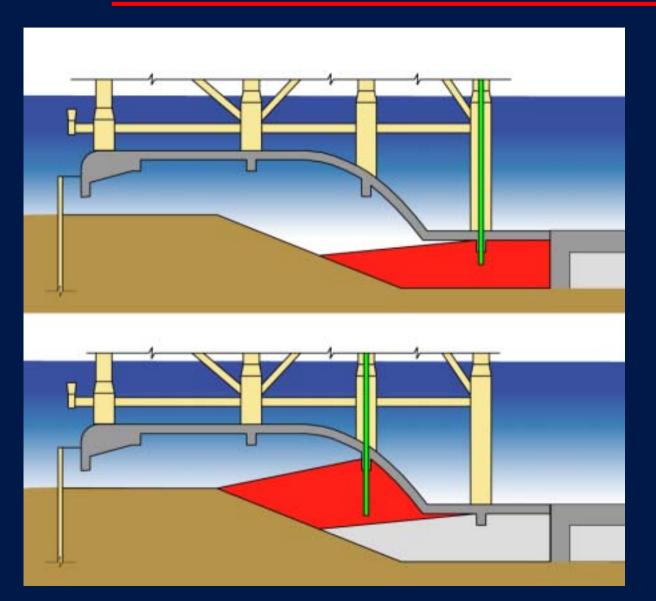


#### Tainter Gate Stilling Basin Shell





#### Tainter Gate - Tremie Sequence

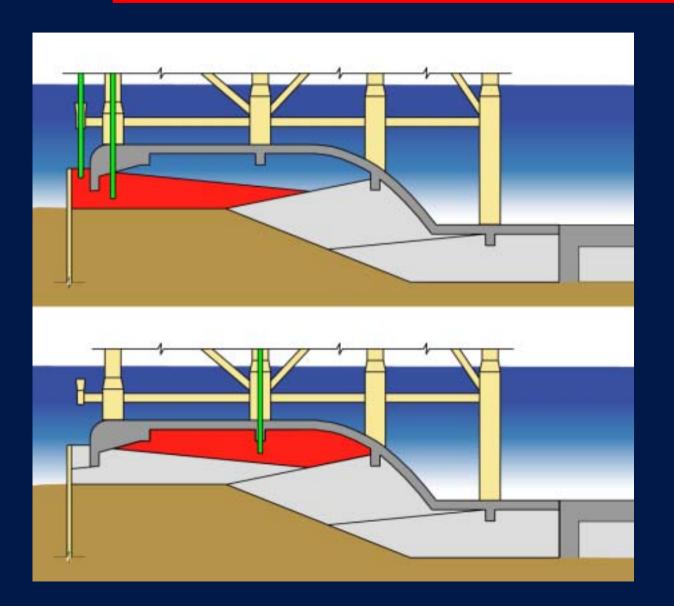


STAGE 1 POUR

**STAGE 2 POUR** 



#### Tainter Gate - Tremie Sequence

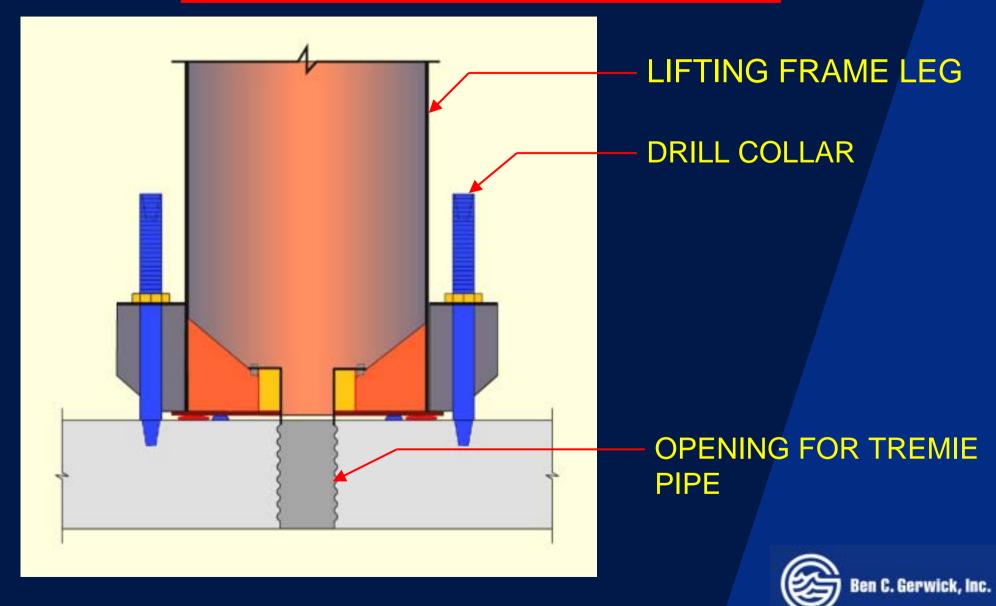


**STAGE 3 POUR** 

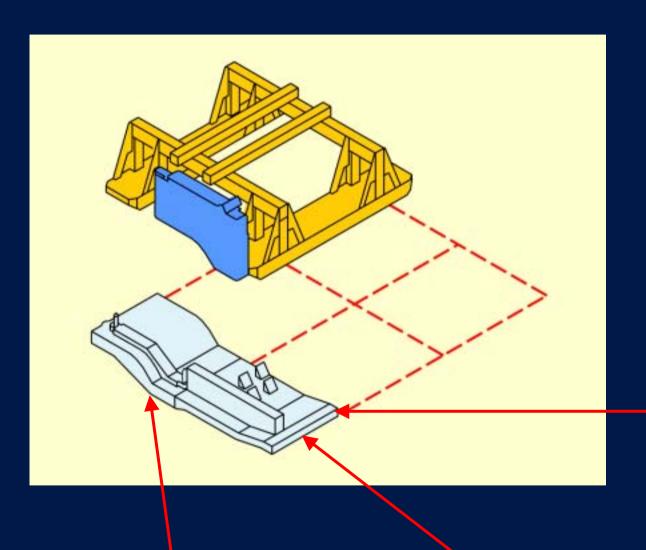
STAGE 4 POUR



#### Lifting Frame Connection



#### Tainter Gate Lower Pier Wall Installation Sequence



SILL SHELL

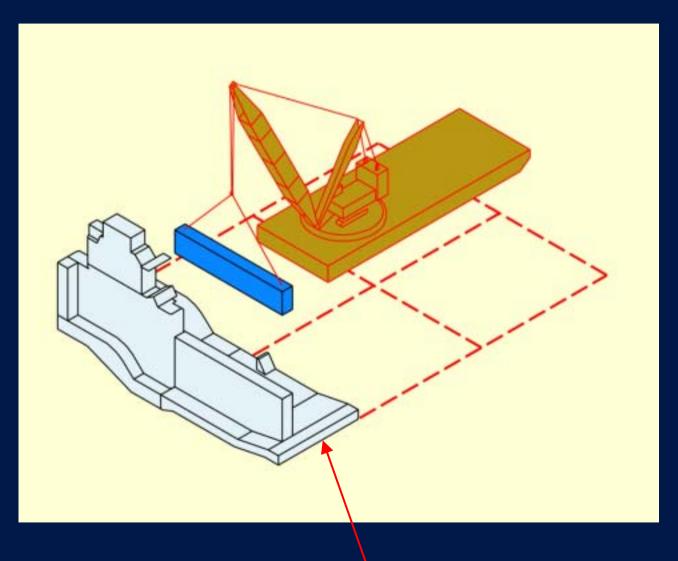
- •SET PIER SHELL
- •TREMIE SHELL BOTTOM
- •DE-WATER
- •PLACE CONCRETE INSIDE

STILLING BASIN SHELL

— MONOLITH 1



#### Training Wall Installation Sequence

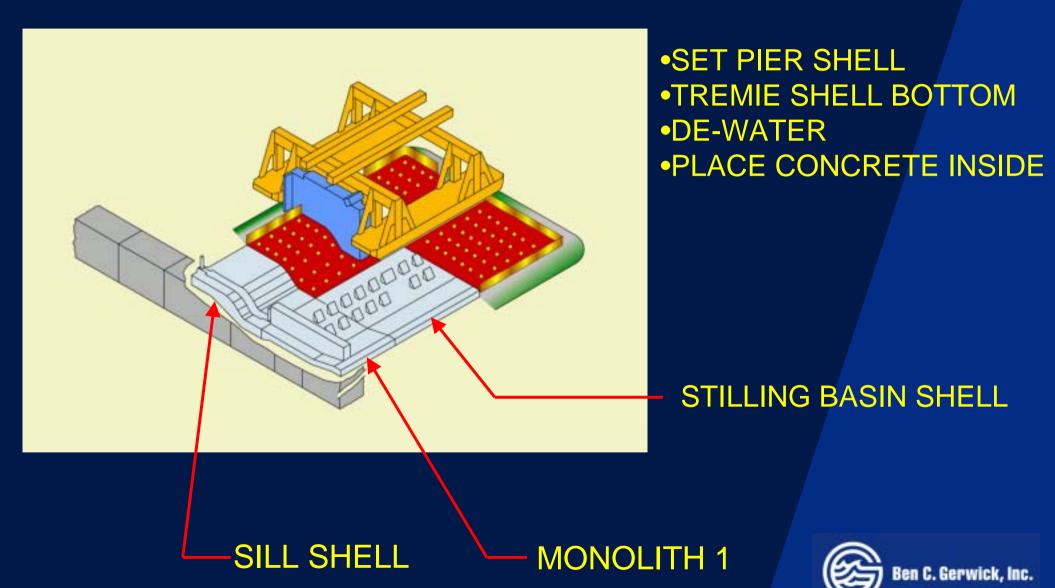


- SET UPPER RIGHT
- TRANING WALL SHELL

MONOLITH 1



#### Tainter Gate Lower Pier Wall Installation Sequence

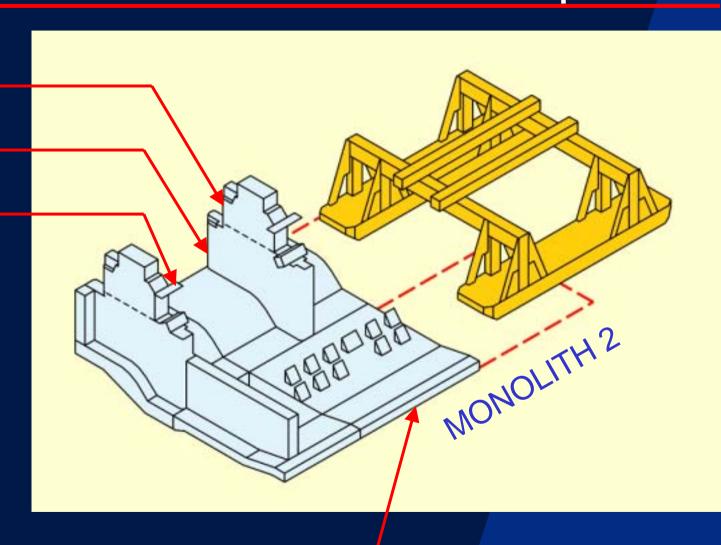


#### Tainter Gate Section Installation Sequence

SET UPPER PIER WALL SHAFT

**SET PIER SHELL** 

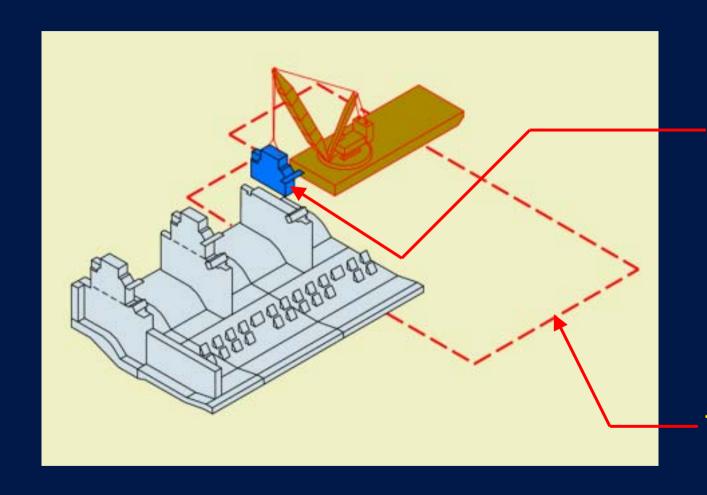
**SET SILL SHELL** 



**SET STILLING BASIN SHELL** 



#### Tainter Gate Section Installation Sequence

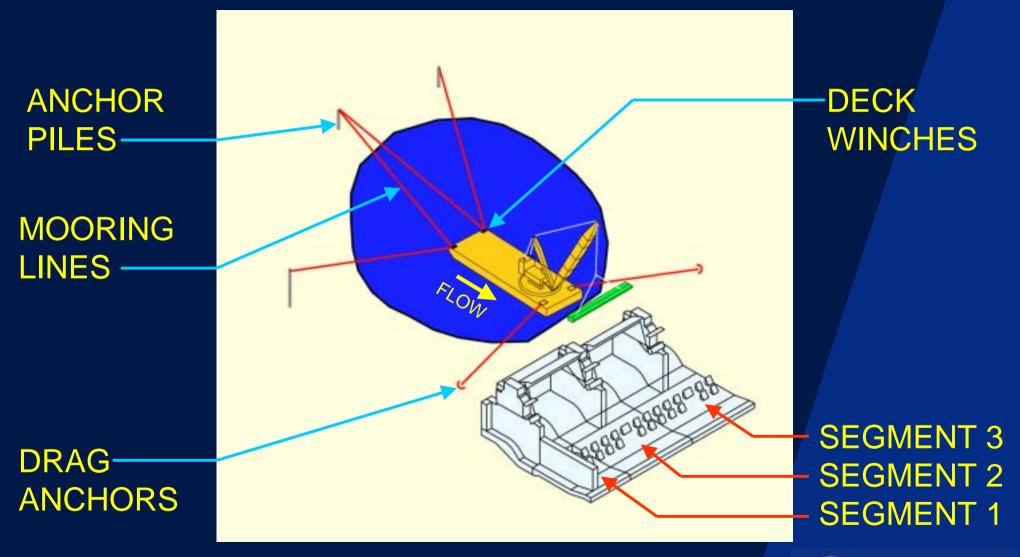


INSTALLATION
UPPER PIER WALL
SHELL

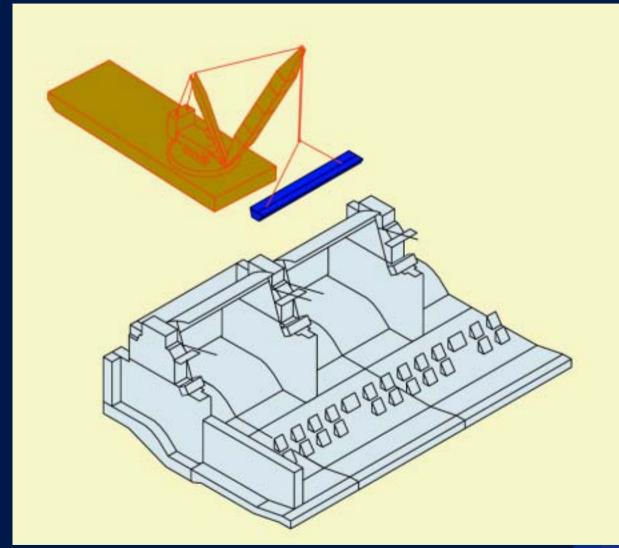
TEMPORARY SCOUR PROTECTION



#### Olmsted Dam – Lift-in Construction

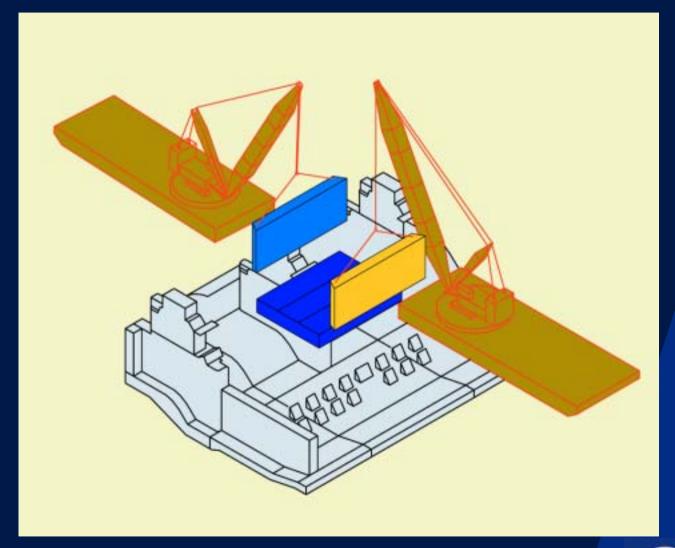


#### Access Bridge Installation



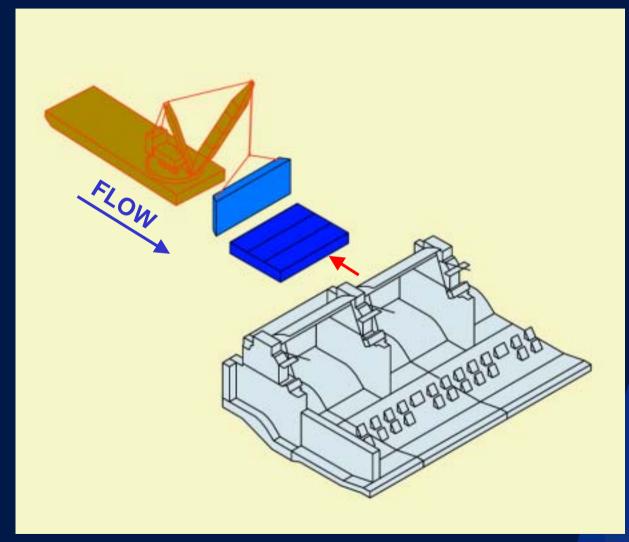


#### Tainter Gate Installation on Barge



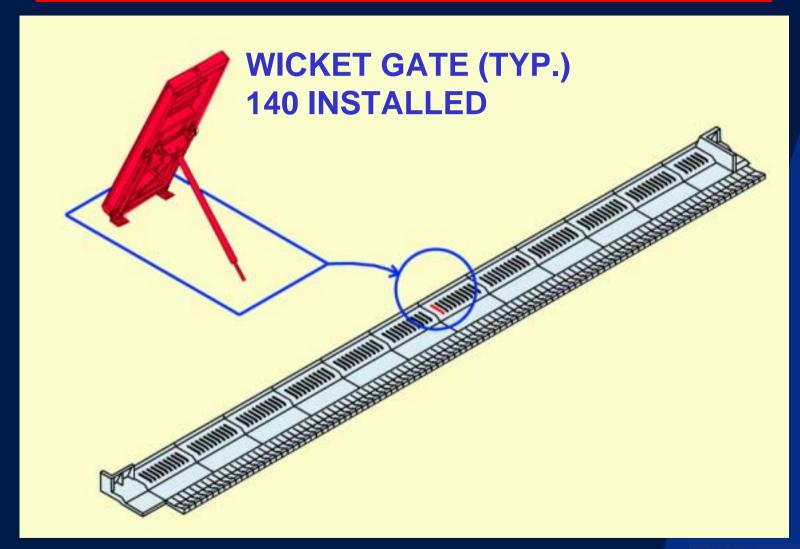


#### Tainter Gate Installation / Barge Removal



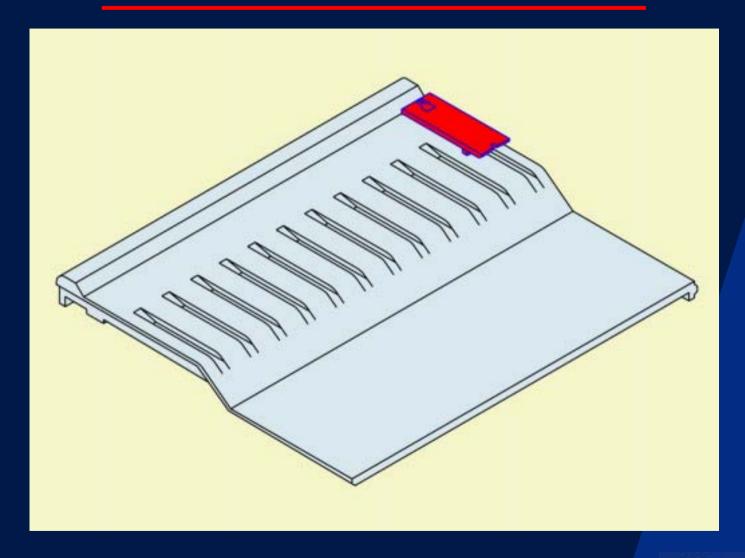


#### Nav Pass Sill and Stilling Basin



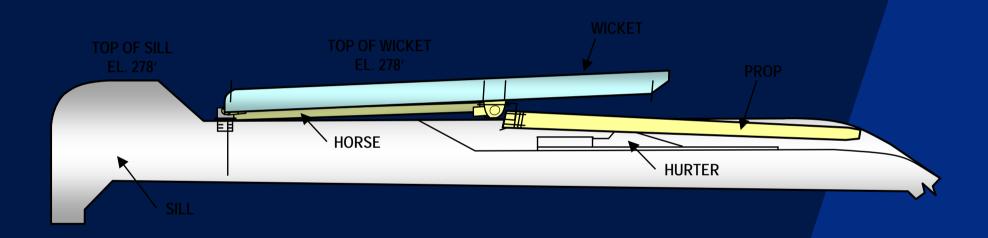


#### Sill Shell Monolith 1-11



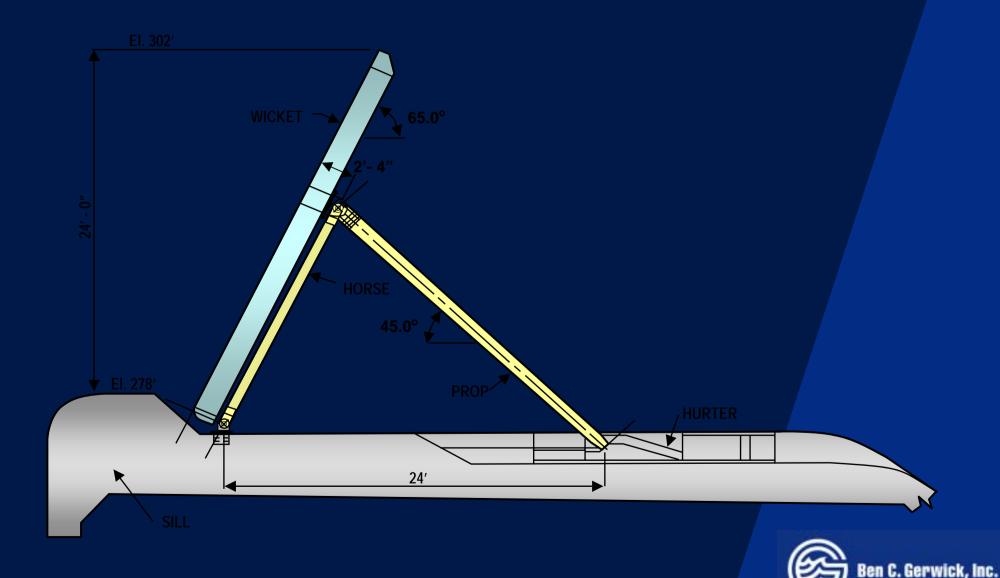


### Wicket Gate (Down)

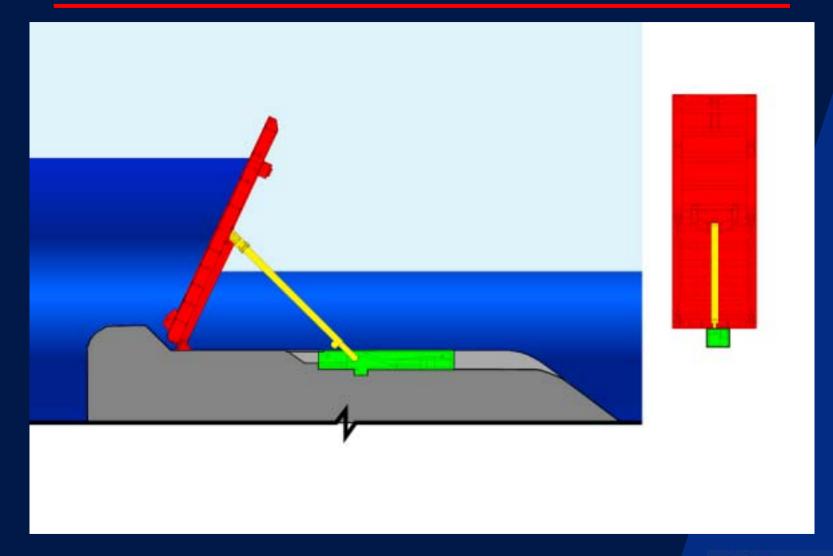




## Wicket Gate (Up)



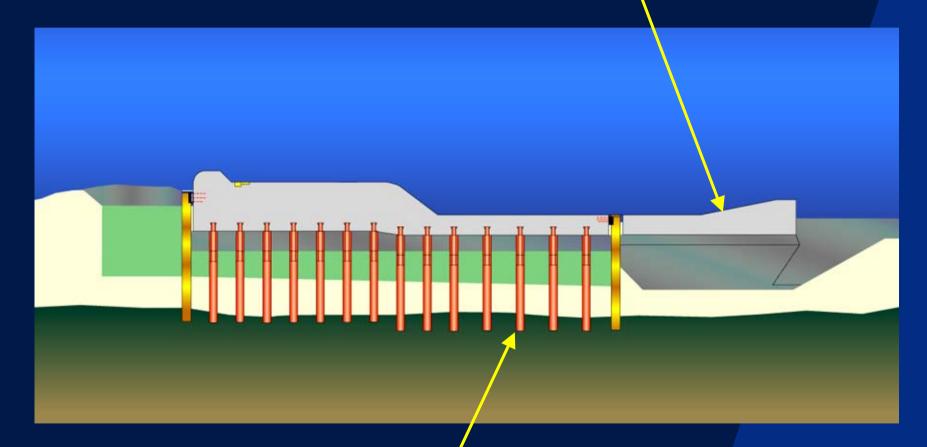
#### Wicket Gate - Plan & Elevation





#### Nav Pass Cross - Section

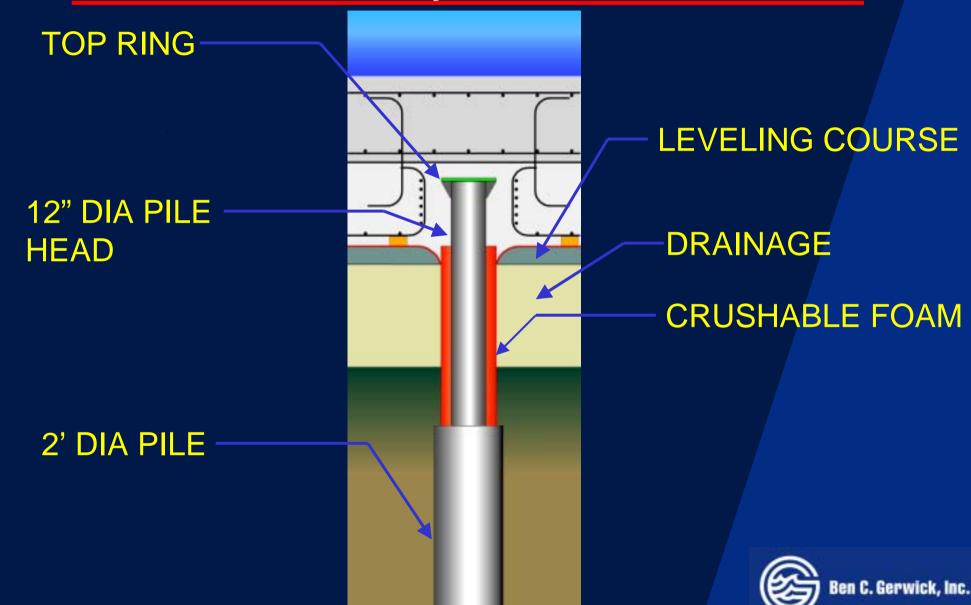
PAVING BLOCK -



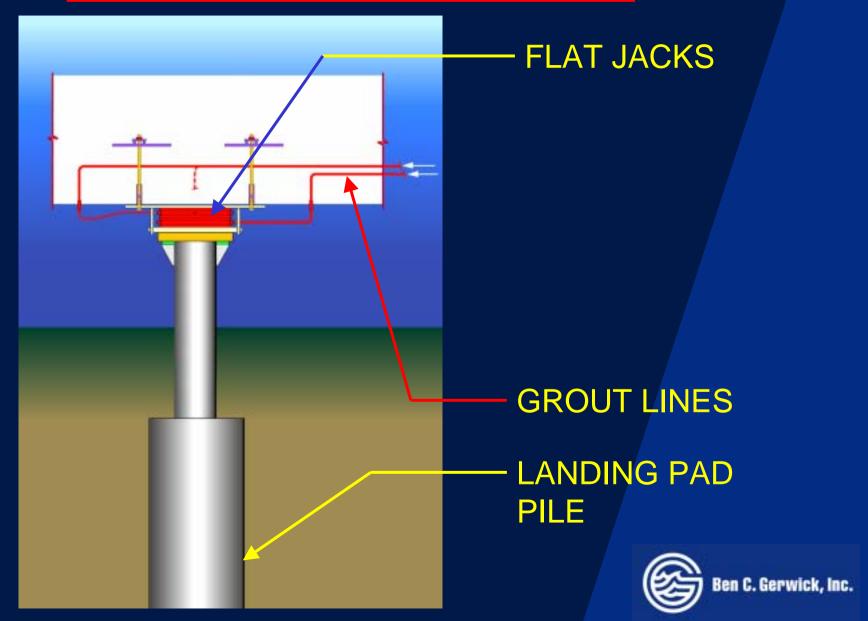
CONTROLLED FIXITY PILES-



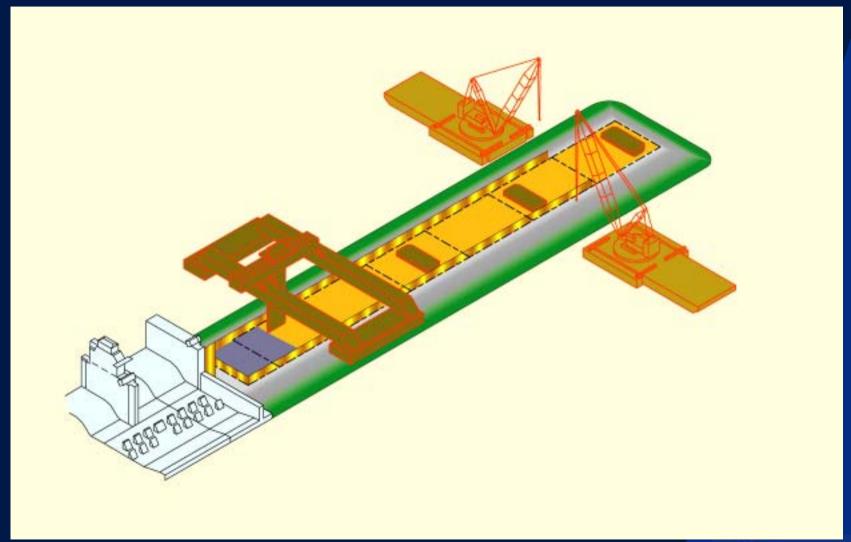
#### Controlled Fixity Pile Head Detail



### Sill Shell - Landing Pad

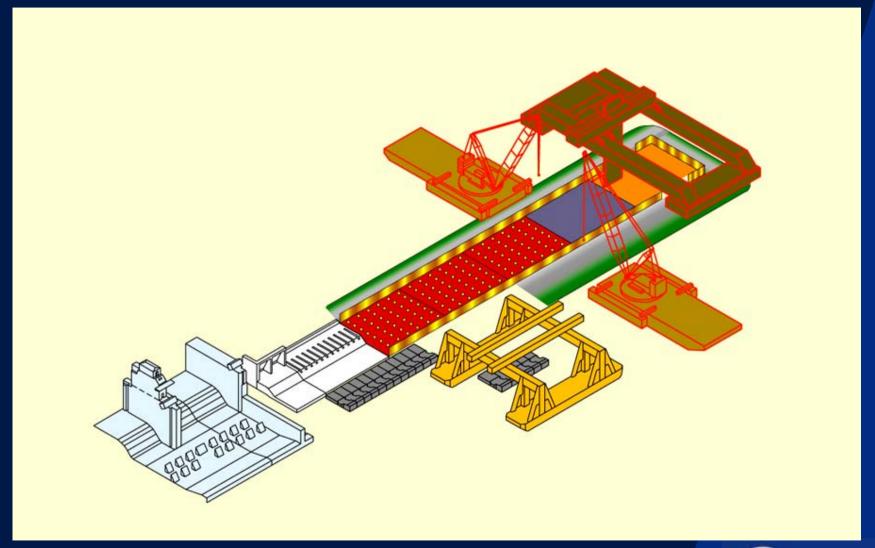


#### Navigable Pass Installation Sequence



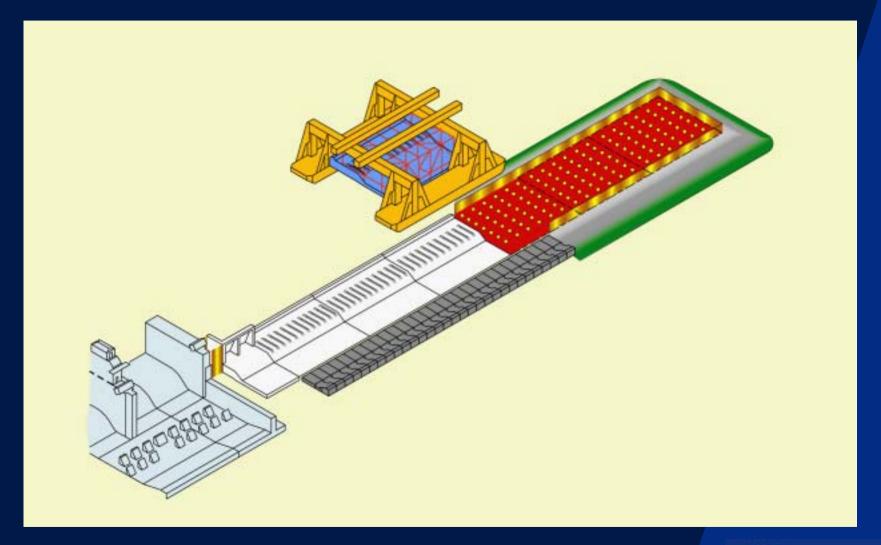


## Navigable Pass Installation Sequence



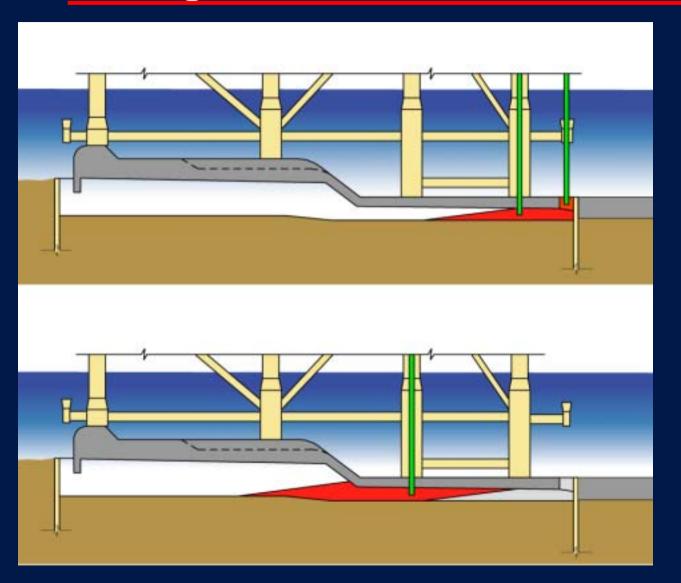


#### Navigable Pass Installation Sequence, stage III





## Navigable Pass - Tremie Sequence

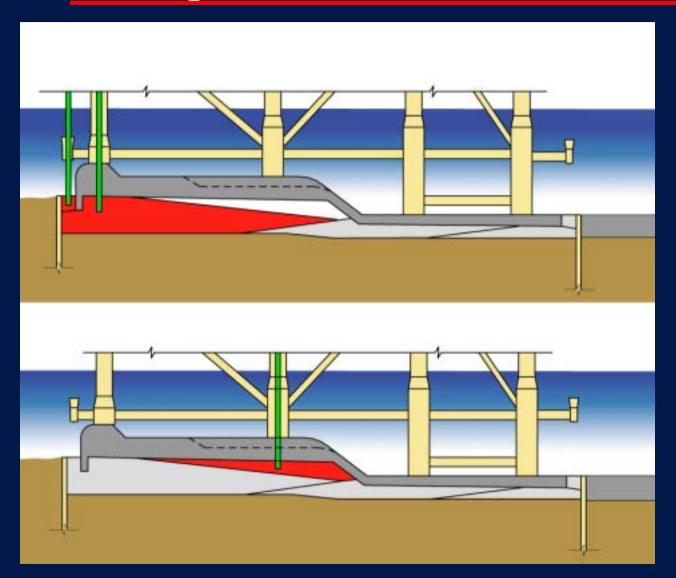


STAGE 1 POUR

STAGE 2 POUR



## Navigable Pass - Tremie Sequence

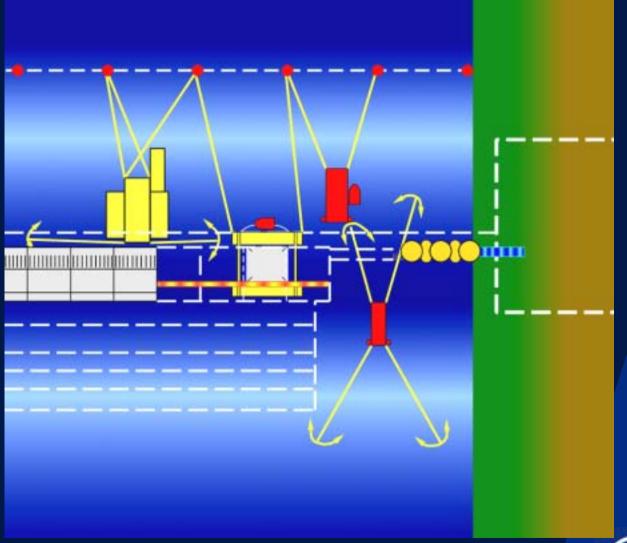


**STAGE 3 POUR** 

**STAGE 4 POUR** 

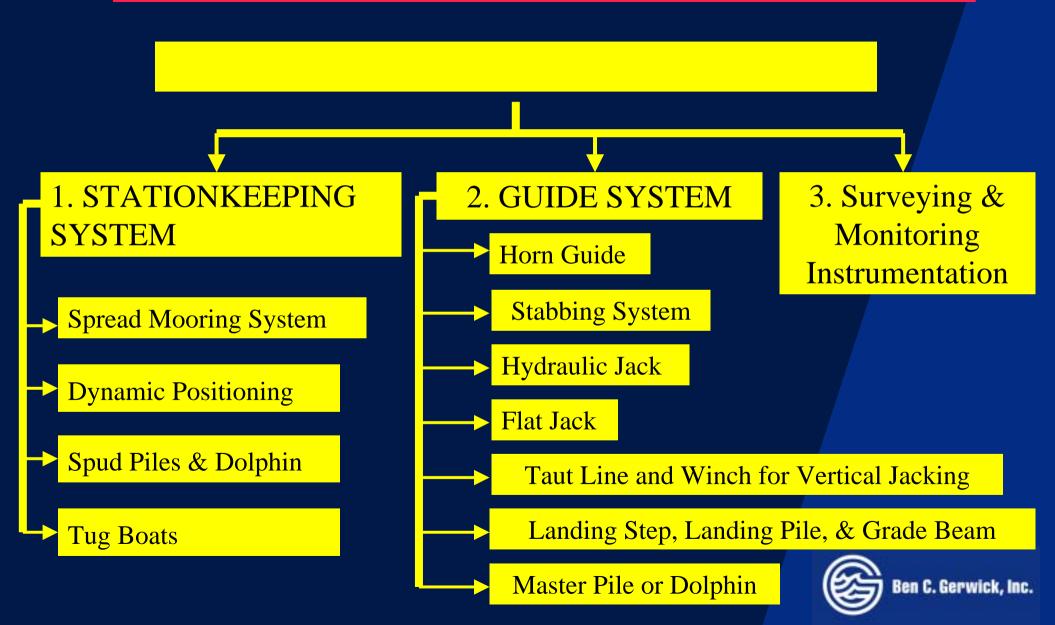


# Mooring Plan / River Blockage





#### Positioning System - An Overview



#### Existing Lock - Dam 2 at Braddock





# Precast Panels in Storage





# Segment 2 Panel Erection





# Construction Joint



# Composite Interface



# Precast Panel Joint Detail





# Headed Reinforcement





# Transport of Segment 1



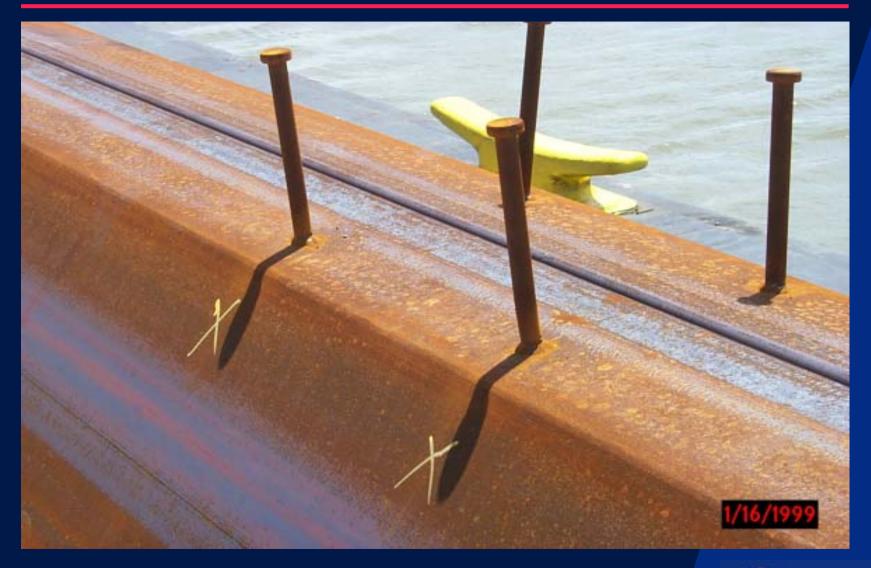


# Master Piles and Template for Cut-Off Wall





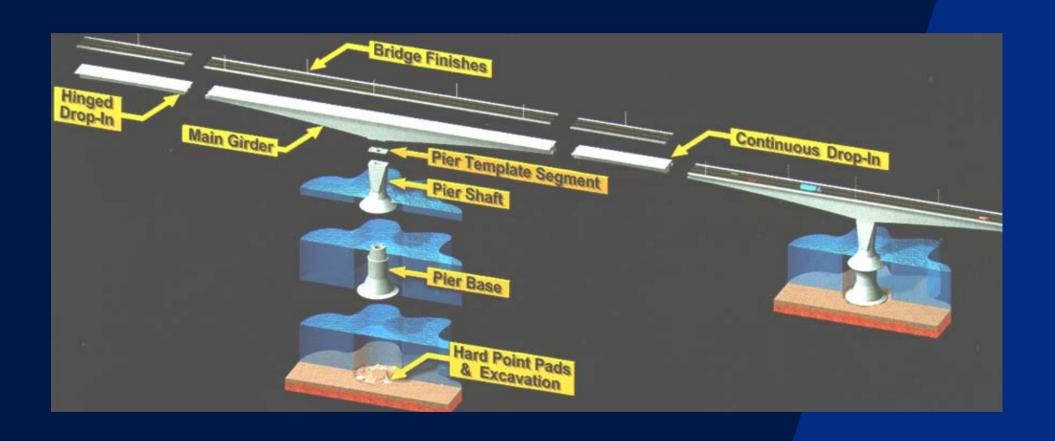
# Studs on Sheet Pile Cut-Off Wall





### Confederation Bridge

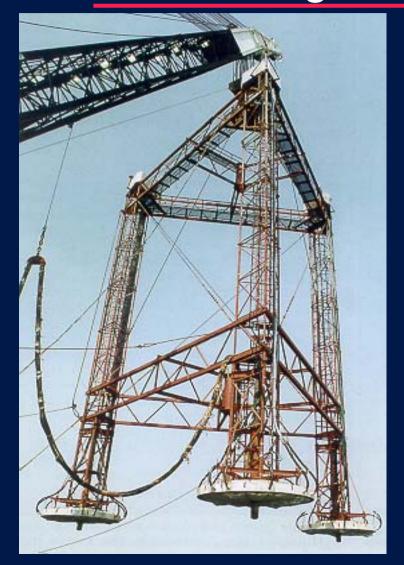
- Positioning By Means of 3 "Hard Pads"





## Confederation Bridge

- Placing 3 Hard Pads with a Frame







#### Confederation Bridge

Leveling A Hard Pad with Inflated Grout Bags
 Pre-Construction Trial Testing

